

We claim:

1. A printhead servicing mechanism, comprising:
 - a driveshaft including a gear; and
 - 5 a sled including first and second engagement structures each adapted to selectively engage said gear and a retaining structure positioned between said first and second engagement structures.
2. A printhead servicing mechanism according to claim 1 wherein said 10 driveshaft is shiftable between a disengaged position and an engaged position wherein said gear engages one of said engagement structures.
3. A printhead servicing mechanism according to claim 2 wherein when 15 said driveshaft is in the engaged position said gear is shiftable between a first engaged position and a second engaged position, wherein said gear in the first engaged position engages said first engagement structure and wherein said gear in the second engaged position engages said second engagement structure.
4. A printhead servicing mechanism according to claim 2 wherein said 20 driveshaft in the engaged position is operatively connected to a power shaft that transmits power to said driveshaft.
5. A printhead servicing mechanism according to claim 2 further comprising a shift structure operatively connected to said driveshaft and moving 25 between an engaged position and a disengaged position, wherein movement of said shift structure from said disengaged position to said engaged position moves said driveshaft from said disengaged position to said engaged position.
6. A printhead servicing mechanism according to claim 5 wherein said 30 shift structure includes a biasing element that biases said shift arm into said disengaged position.

7. A printhead servicing mechanism according to claim 6 further comprising a printhead cartridge that overcomes said biasing element on said shift arm and moves said shift structure from said disengaged position to said engaged position.

8. A printhead servicing mechanism according to claim 3 wherein said driveshaft further includes a biasing member that biases said gear from said first engaged position to said second engaged position.

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9. A printhead servicing mechanism according to claim 4 further comprising a motor that drives said power shaft.

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10. A printhead servicing mechanism according to claim 1 wherein said sled includes a first sled including said first engagement structure and a cap, and a second sled including said second engagement structure and a wiper and a spittoon, wherein said first and second sleds are operable for movement independent of one another.

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11. A printhead servicing mechanism according to claim 8 wherein when said gear is in said first engaged position and in a retaining portion of said retaining structure, said retaining structure retains said gear on said first engagement structure.

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12. A printhead servicing mechanism according to claim 11 wherein said first engagement structure comprises a first rack, said second engagement structure comprises a second rack and said retaining structure comprises a retaining wall positioned therebetween, and said retaining wall comprising first and second end walls with said retaining portion extending therebetween.

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13. A printer comprising:
first and second sleds, said first sled including a first engagement structure and first and second retaining walls positioned on opposite sides of said first

engagement structure, and said second sled including a second engagement structure positioned adjacent said second retaining wall;

5 a servicing station drive structure movable between a disengaged position, a first engaged position, and a second engaged position, said drive structure in the first engaged position engaging said first engagement structure and said drive structure in the second engaged position engaging said second engagement structure; and

a biasing member that biases said servicing station drive structure to move from said first engaged position to said second engaged position.

10 14. A printer according to claim 13 wherein said first retaining wall includes an access region, said drive structure moving through said access region when said drive structure is moved from the disengaged position to the first engaged position.

15 15. A printer according to claim 13 wherein said second retaining wall includes an access region, said drive structure moving through said access region when said drive structure is moved from the first engaged position to the second engaged position.

20 16. A printer according to claim 13 further comprising a biasing member that biases said drive structure to move from the first engaged position to the disengaged position, said first retaining wall including a retaining region that retains said drive structure in said first engaged position and against biased movement to said disengaged position when said drive structure is positioned within said retaining 25 region.

30 17. A printer according to claim 13 further comprising a biasing member that biases said drive structure to move from the first engaged position to the second engaged position, said second retaining wall including a retaining region that retains said drive structure in said first engaged position when said drive structure is positioned within said retaining region.

18. A printer according to claim 16 further comprising:
a shift arm that pivots between an actuated position and a non-actuated
position, wherein pivotal movement of said shift structure from the non-actuated
position to the actuated position moves said drive structure from the disengaged
5 position to the first engaged position,
wherein said biasing member biases said shift arm to pivot from the actuated
position to the non-actuated position; and
a printhead carriage operable to pivot said shift arm from the non-actuated
position to the actuated position by overcoming a biasing force of said biasing
10 member.

19. A printer according to claim 13 wherein in the disengaged position
said servicing station drive structure is not in contact with either of said first and
second engagement structures, wherein in the first engaged position said servicing
15 station drive structure is powered by a power shaft and mates with said first
engagement structure to translate said first servicing sled parallel to a sled
translation axis, and wherein in the second engaged position said servicing station
drive structure is powered by said power shaft and mates with said second
engagement structure to translate said second servicing sled parallel to said sled
20 translation axis.

20. A printing mechanism including a printhead, comprising:
means for servicing said printhead, said means for servicing including means
for retaining and first and second means for engaging; and
25 means for translating said means for servicing said printhead, said means for
translating operable to move from a first translating position in engagement with
said first means for engaging to a second translating position in engagement with
said second means for engaging,
wherein said means for retaining includes a retaining region, and wherein
30 said means for retaining retains said means for translating in said first translating
position when said means for translating is positioned within said retaining region.

21. A printing mechanism according to claim 20 further comprising means for shifting said means for translating between a disengaged position and said first translating position, said means for shifting biased to shift said means for translating into said disengaged position in the absence of an external force on said means for shifting.

22. A printing mechanism according to claim 20 wherein said printhead is configured to selectively actuate said means for shifting by advancing into and out 10 of contact with said means for shifting.

23. A printing mechanism according to claim 21 wherein said means for servicing comprises first and second servicing sleds, said means for retaining comprises a retaining wall positioned on said first sled, said first and second means 15 for engaging comprise, respectively, first and second racks each extending along said retaining wall, said first rack positioned on said first sled and said second rack positioned on said second sled, said means for translating comprises a driveshaft, and said means for shifting comprises a shift arm including a leaf spring, a first end adapted for contact with said printhead, and a second end secured to said driveshaft.

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24. A method of actuating a servicing mechanism to service a printhead, comprising:

moving a translation device into engagement with a retaining region of a first servicing mechanism;

25 moving said translation device such that said first servicing mechanism is moved with respect to said translation device such that said translation device is positioned out of said retaining region;

moving said translation device into engagement with a second region of said servicing mechanism; and

30 powering said translation device such that said second servicing mechanism is moved with respect to said translation device.

25. A method according to claim 24 wherein the step of moving the translation device into engagement with the first servicing mechanism comprises moving a printhead carriage into contact with an actuation device so as to move the actuation device from a non-actuated position to an actuated position, wherein
5 movement of said actuation device from said non-actuated position to said actuated position moves said translation device from a disengaged position into engagement with said first servicing mechanism.

26. A method according to claim 25, prior to moving said translation
10 device into engagement with the second servicing mechanism, further comprising:
removing said printhead carriage from contact with said actuation device,
whereafter a retaining wall of said retaining region retains said translation device in
engagement with said first servicing mechanism in said retaining region.

15 27. A method according to claim 24 wherein said step of powering said translation device such that said translation device is positioned out of said retaining region comprises:

powering said translation device such that said first servicing mechanism is moved with respect to said translation device such that said translation device is
20 moved into an access region of said first servicing mechanism; and
moving said translation device through said access region of said first servicing mechanism.

28. A method according to claim 27 wherein said translation device is
25 biased by a biasing member to move through said access region of said first servicing mechanism.

29. A printer comprising:
a housing;
30 a printhead carriage positioned within said housing and supporting a printhead for movement along a printhead carriage axis between a printzone and a servicing region;

a feed roller drive shaft operable to move a sheet of print media through said printzone;

5 a servicing sled positioned within said servicing region and including a spittoon, a wiper, a cap, first and second racks and a guide wall positioned between said racks, said guide wall including a retaining region and an access region; and

10 a servicing sled drive shaft powered by said feed roller drive shaft, said servicing sled drive shaft including a gear slidably mounted thereon, and a biasing member secured to said shaft and said gear, said servicing sled drive shaft movable between a disengaged position wherein said gear is not in contact with said servicing sled and an engaged position wherein said gear is movable between contact with said first rack and second rack,

15 wherein said biasing member biases said gear to move from said first rack to said second rack when said gear is aligned with said access region of said guide wall and wherein said retaining wall retains said gear on said first rack when said gear is positioned adjacent said retaining region of said guide wall.

30. A printhead servicing mechanism according to claim 1 further comprising a biasing member coupled to said driveshaft for biasing the driveshaft out of engagement with said first and second engagement structures.

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31. A printhead servicing mechanism, comprising:

a driveshaft; and

25 a sled including a rack adapted to selectively engage said driveshaft and a retaining wall positioned to retain said driveshaft on said rack in a zone.

32. A printhead servicing mechanism according to claim 31 wherein said driveshaft is shiftable between a disengaged position and an engaged position wherein said driveshaft engages a powered gear and said rack.

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33. A printhead servicing mechanism according to claim 32 wherein said powered gear is operatively connected to a power shaft that, when said driveshaft is in the engaged position, said powered gear transmits power to said driveshaft.

34. A printhead servicing mechanism according to claim 33 wherein said powered gear is an idler gear and wherein said power shaft transmits power to said driveshaft through said idler gear.

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35. A printhead servicing mechanism according to claim 34 further comprising a shift arm that moves between an engaged position and a disengaged position, wherein movement of said shift arm from said disengaged position to said engaged position moves said driveshaft into engagement with said idler gear and
10 said rack.

36. A printhead servicing mechanism according to claim 35 further comprising a printhead carriage that moves said shift arm from said disengaged position to said engaged position.

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37. A printhead servicing mechanism according to claim 36 wherein said retaining wall includes a first region and a second region, wherein powering of said driveshaft moves said driveshaft from said first region to said second region of said rack, and wherein movement of said driveshaft from said first region to said second
20 region of said rack moves said shift arm out of engagement with said printhead carriage.

38. A printhead servicing mechanism according to claim 33 further comprising a motor that drives said power shaft.

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39. A printhead servicing mechanism according to claim 31 wherein said sled further includes a cap, a wiper and a spittoon.

40. A printhead servicing mechanism according to claim 36 wherein said
30 shift arm includes a biasing element that biases said shift arm to move said driveshaft into said disengaged position when said driveshaft is not positioned in said zone of said retaining wall.

41. A printhead servicing mechanism according to claim 32 wherein when said driveshaft is in said disengaged position said retaining wall interferes with said driveshaft thereby preventing movement of said sled.

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42. A printer comprising:

a sled including an engagement structure and a retaining structure;

a power shaft that transmits power to a driveshaft; and

the driveshaft movable between an engaged position and a disengaged

10 position, said driveshaft in the engaged position engaging said power shaft and said engagement structure of said sled so as to transmit power from said power shaft to said sled,

wherein said sled retaining structure retains said driveshaft in said engaged position in a predetermined zone of said retaining structure.

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43. A printer according to claim 42 further comprising a shift mechanism that moves between an actuated position and a non-actuated position, wherein movement of said shift mechanism from the non-actuated position to the actuated 20 position moves said driveshaft from the disengaged position to the engaged position.

44. A printer according to claim 43 further comprising a printhead carriage movable between an engaged position and a disengaged position, wherein movement of said printhead carriage from the disengaged position to the engaged 25 position moves said shift mechanism from the non-actuated position to the actuated position.

45. A printer according to claim 43 wherein said shift mechanism comprises a shift arm including a biasing member, said biasing member biasing said shift arm into the non-actuated position in the absence of an external force on said shift arm.

46. A printing mechanism including a printhead, comprising:
means for translating a means for servicing said printhead, said means for
translating biased to move from a translating position and a non-translating position
in the absence of an external force on said means for translating; and
5 means for servicing said printhead, said means for servicing including means
for retaining said means for translating in engagement with said means for servicing
in a predetermined zone of engagement of said means for retaining.

47. A printing mechanism according to claim 46 further comprising
10 means for shifting said means for translating between said translating position and
said non-translating position, said means for shifting biased to translate said means
for translating into said disengaged position in the absence of an external force on
said means for shifting.

15 48. A printing mechanism according to claim 47 wherein said printhead
is configured to selectively actuate said means for shifting by advancing into and out
of contact with said means for shifting.

49. A printing mechanism according to claim 46 further comprising
20 means for powering said means for translating, wherein said means for translating
engages said means for servicing and said means for powering in said translating
position.

50. A printing mechanism according to claim 47 wherein said means for
25 servicing comprises a servicing sled including a rack that extends along a length of
said sled, said means for retaining comprises a guide wall positioned adjacent to and
extending along at least a portion of said rack, said means for translating comprises a
driveshaft that engages a powered gear and said rack and is retained on said rack by
said guide wall in said translating position, and said means for shifting comprises a
30 shift arm including a leaf spring, a first end adapted for contact with said printhead,
and a second end secured to said driveshaft.

51. A method of actuating a servicing mechanism to service a printhead, comprising:

moving a translation device into engagement with a first region of a servicing mechanism; and

5 powering said translation device such that said servicing mechanism is moved with respect to said translation device and such that a second region of said servicing mechanism is moved into engagement with said translation device, said second region retaining said translation device in contact with said servicing mechanism.

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52. A method according to claim 51 wherein said step of moving the translation device comprises moving a printhead carriage into contact with an actuation device so as to move the actuation device from a non-actuated condition to an actuated condition, wherein movement of said actuation device from said non-15 actuated position to said actuated position moves said translation device from a disengaged position into engagement with said first region of said servicing mechanism.

53. A method according to claim 52 further comprising:

20 removing said printhead carriage from contact with said actuation device, whereafter said translation device remains engaged with said servicing mechanism while said translation device is in contact with said second region of said servicing mechanism, and

25 thereafter, translating said servicing mechanism, such that said second region is moved with respect to said translation device, to service said printhead in the absence of said printhead carriage.

54. A method according to claim 53 further comprising translating said servicing mechanism such that said second region of said servicing mechanism is 30 moved out of contact with said translation device, whereupon said translation device is biased into said disengaged position.

55. A printhead servicing mechanism according to claim 31 further comprising a biasing member coupled to said driveshaft for biasing the driveshaft out of engagement with said rack.

5 56. A printhead servicing mechanism according to claim 34 wherein said driveshaft includes projections, and said idler gear includes projections, and wherein in the engaged position said projections of said driveshaft mate with said projections of said idler gear.